

# Determinants of Stock Prices of Joint - Stock Companies in Industrial Sector Listed On Hcm City Stock Exchange

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**Abstract**—This paper investigates the factors that affect the price of the shares of industrial companies listed on the Stock Exchange in Ho Chi Minh City (HOSE). The data used in this study are collected according to the date of publication unified consumer price index of the Central Statistical Office (on the 24th of the last month of the quarter) from 2012 to 2015. Using regression analysis showed that EPS and exchange rate (USD / VND) and interest rate correlated to the profitability ratio of the shares the price of gold and the rate of inflation measured by the consumer price index (CPI) has negative correlation to rate profitability of the shares.

**Keywords**— Industrial sectors, price, stocks returns, HOSE.

## I. INTRODUCTION

Vietnam's stock market since its inception has been through the ups and down in its development stages in line with the volatility of the domestic economy. However, it also fully embodies the essence of a true market, where business owners can raise capital in the fastest and most effective way to meet their business needs in time, through the issuance of securities. Particularly, businesses in industrial sectors are considered to be highly attractive. The sector plays an important role in the development of the national economy in order to ensure domestic demand and exports and facilitate international trade and bring the country more revenue with an average growth rate of 9.8% in 2015, compared to this of 2014. Therefore, investments in this field promise more profitable prospects. This research is aimed to find out the factors that affect stock price fluctuations of companies in the industrial sector. Then judgments and recommendations on the supply and demand of shares of companies in the industrial sector made in order to contribute to the development of stock

markets in general and the stock market of the companies in industrial sector are particularly necessary and urgent in today's international economic integration.

This paper analyzes factors affecting the stock prices of companies in the industrial sector listed on HOSE. Then solutions are proposed to help investors overcome the negative impacts and take advantage of business opportunities.

## II. THEORIES & PREVIOUS STUDIES

### 2.1. Stock market

Stock market, in terms of the modern economy, is defined as a place to trade securities in medium and long-term. The trade is carried out in the primary market when buyers first buy securities from the issuers and in the secondary market when the buyer resells the securities in market primary market.

Naturally, the stock market reflects the exchange relations, the purchase of ownership of means of production and capital, i.e. the purchase of capital ownership. In the market economy, capital has been circulated as a commodity that has value and use value. The stock market is a highly developed form of commodity production.

In terms of characteristics, the stock market is a part of the financial market and specializes in buying and selling medium and long-term securities. The inception of stock market is an objective necessity.

The role of stock market is a mean of raising investment capital for production in businesses and economic development. In addition, it is a tool to encourage people to save and use these savings to invest, thereby promote socialization of investment. Furthermore, it also helps businesses use capital efficiently and contributes capital among sectors in the economy and creates a fast and uniform development of the economy. Lastly, the stock

market is a tool to attract and control foreign investments.

The stock market can be classified in following issues. If based on the legal forms, it can be divided into official market and the unofficial market. Regarding to the nature of the issuance or circulation of securities, there are primary market and secondary market. If the trading methods considered, there are spot market and the future market. Lastly, based on the characteristics of the commodities circulated, there are stock market, bond market and instruments and securities-origin market.

## 2.2. Stock Price

A stock is evidence confirming the lawful rights and interests of the owners of assets or capital of the issuer. Securities are in the form of certificates, book-entry or electronic data including stocks, bonds, fund certificates, stock options, warrants, call-options, put-options, futures contracts or securities indices. Characteristically, A stock is a long-term financing instrument. The stock is a very effective tool in the market economy to create a huge amount of capital to finance the expanding of production or the state's and individuals' investments. Securities are commercial papers with economic value or, in other words, financial instruments that have the corresponding value and can be sold or transferred. Securities are a very typical kind of goods in the mechanism.

## 2.3. Factors affecting the price of stock

The stock price can be influenced by the political, social and legal environment. Firstly, the political environment has a strong influence on the stock market. The society always has certain impacts on the operation of the stock market. Political factors include changes in government and politics. Because Vietnam is relatively politically stable, this factor can be ignored. In addition, the policy system has a huge impact on the stock market itself as well as the operation of businesses. Every policy change may entail impacts as stock prices would increase or decrease, especially during sensitive times.

Besides, the stock price also is affected by the macro-economic factors. Firstly, the exchange rate has an influence on the stock market on two sides: financial environment and activities of enterprises, particularly those businesses importing raw materials. Rising exchange rate has a strong impact on the stock market. Foreign capital is invested heavily in the stock market but the rise in the exchange is a strong reason for foreign investors to withdraw from the market. A large amount of capital is quickly withdrawn from the market and stock prices will decrease and this in turn will cause the

interest rate to go up. If interest rates rise, they will become a burden for the economy, and vice versa. Moreover, the inflation is the depreciation of the currency. It changes consumer behaviors and individuals' and businesses' savings behaviors. Unreasonable increase in inflation rate would cause difficulties for production and business activities and prevent the business from growth and innovation. Inflation is often a signal of sluggish growth of the economy and interest rates will rise. Then the businesses' profitability drops and the share prices fall. The lower inflation rate, the more capable the stock price will rise and vice versa. Normally, stock prices tend to rise when the economy is well-developed and tend to fall as the economy deteriorates. Thus, if the development trends of the economy are predicted, the general development trend of the stock market can be predicted. Therefore, predicting the economic situation to consider its impacts on the stock price is also very important to investors. Lastly, changes in interest rates of government bonds will affect the value of securities. The increase in benchmark interest rate makes the prices of other securities decrease and vice versa.

## 2.4. The experimental studies

Factors affecting the prices of the stock (rate of return) are a concern of many research economists in recent years. The resulting lessons from these empirical studies include two groups of factors: macro factors and internal factors related to the financial situation and performance of the company. Here, the authors would like to list some typical research as the basis for this article.

### 2.4.1. Earnings per share (EPS)

EPS is considered as an important variable when calculating share prices. The higher EPS, the stronger the company's capability is and the higher the ability is to pay dividends and more likely the stock prices is to rise. Therefore, EPS can be seen as a combined indicator reflecting the results of a business' operations. It helps individual and organizational investors and analysts easily understand and compare different shares. Studies by Al-Qenae et al (2002), Al-Tamimi et al (2007), Mehr-un-Nisa and Nishat (2012), Uddin et al (2013) and Truong Dong Loc (2014) conclude that EPS is positively correlated with the stock price.

### 2.4.2. Exchange rate (USD / VND)

The exchange rate is a very important variable affecting the equilibrium of the balance of trade and balance of payments; thus, it affects production, employment and the balance of the economy. The volatility of the

exchange rate has a strong impact on businesses in general and most seriously on import - export businesses in particular. Affecting the prices of imported goods, exchange rate changes lead to the changes in the prices of exports and imports, thereby affecting the business activities then the stock prices.

Similar to EPS, regression analysis results indicate that the USD / VND exchange rate are positively correlated with profitability ratios of the stock. This result is consistent with studies by Eita (2012), Aurangzeb (2012), Phan Thi Bich Nguyet and Pham Duong Phuong Thao (2013), Truong Dong Loc (2014). Meanwhile, research by Liu and Shrestha (2008) is against the conclusion that exchange rates have an inverse relationship with the company's stock price.

#### 2.4.3. Interest rate

Government bonds interest rates are considered as the benchmark rate. Changes in these rates will affect the stock prices. The benchmark interest rate increase makes the prices of other securities fall. On the contrary, decline in these rates causes the prices of securities to increase. Relationship between market interest rates and securities interest rate is an indirect relationship that impacts the stock price. If market interest rates are higher than the interest rate of securities, securities prices will fall, which makes activities on the stock market decline because people like to save rather than invest in the stock market. Some experimental studies by Al-Qenae et al (2002), Liu and Shrestha (2008), Hussainey and Ngoc (2009), Mehr-un-Nisa and Nishat (2012), Eita (2012), Aurangzeb (2012) also share the same view that interest rates have a negative correlation with the stock price.

#### 2.4.4. Gold price

In Vietnam, the stock market and real estate market are already applicable to state channel management measures, while the gold market is not, so cash flows into the gold market is inevitable and gold is also seen as an investment channel for many people. The changes in the price of gold in the country are expected to have certain effects on the prices of listed shares. The reason is that when gold prices rise, gold is an attractive investment channel for investors. Meanwhile, cash flow shifts from stock markets to gold market make the stock price fall and vice versa. In other words, the relationship between the stock price and the gold price is an inverse relationship. Study by Truong Dong Loc (2014) about the factors affecting share prices of companies listed on the Ho Chi Minh Stock Exchange also gave similar conclusion.

#### 2.4.5. Inflation

Inflation is defined as the devaluation of the currency, it changes consumer behavior and people's and businesses' savings. The unreasonable inflation rate will cause some problems to production and business activities. It slows down the business' growth and innovation. Increase in inflation rate is often a signal of an unstable economy, interest rates will increase, the profitability of the business will be lower and then the stock prices will fall. The lower inflation, the more capable the stock price will rise and vice versa. This is consistent with the studies by Al-Qenae et al (2002), Al-Tamimi et al (2007), Liu and Shrestha (2008), Mehr-un-Nisa and Nishat (2012), Aurangzeb (2012), Phan Thi Bich Nguyet and Pham Duong Phuong Thao (2013) and Zhang Dong Loc (2014).

Usually, stock prices tend to rise when the economy grows well and tend to fall as the economy deteriorates. Thus, if the development trends of the economy are predicted, the general development trend of the stock market can be predicted. Therefore, predicting the economic situation to consider its impacts on the stock price is also very important to investors.

## 2.4 Research Methodology

### 2.4.1. Data collection

This study analyzes data from audited balance sheets and income statements of the companies listed on HOSE, Vietnam from 2012 to 2015. The selection of the listed companies and the audited reports ensures levels of accuracy because the figures have been checked for transparency and fairness. In unlisted companies, the audit of financial statements is not officially required so that the figures may not accurately reflect the situation of the company. Therefore, using data from these companies will not accurately reflect the research results. The data on lending rates, USD / VND exchange rate, gold price and consumer price index are collected from official sources of the State Bank of Vietnam ([www.sbv.gov.vn](http://www.sbv.gov.vn)), General statistics Office of Vietnam ([www.gso.gov.vn](http://www.gso.gov.vn)) Saigon Jewelry Company- SJC ([www.sjc.com.vn](http://www.sjc.com.vn)). The data are collected on the same date of the publication of consumer price index by the general Statistics Office (the 24th of the last month of the quarter).

The figures in the financial reports after collected will be calculated on Excel to be indicators used in this research.

### 2.4.2. Research Methodology

Descriptive Statistics is related to the collection of data, summarizing, presenting, calculating and describing the

different characteristics to reflect a general object of study. In the study the dependent variable and independent variables from 2012 to 2015 are described through mean, median, maximum value, minimum value and standard deviation of the variables. Through analysis of these values, the typical level of the variables will be seen. Sometimes in some special cases (data with big changes or unusual differences), the average value does not represent the overall nature for too small or too large big value will distort the results of the average. While the median is an average value which better represents the average. Maximum and minimum values and standard deviation are used to evaluate the degree of representing of the average value for the overall study. If the value of the standard deviation is larger, the variance of variables is larger; thus, representative of the average figures is lower and vice versa.

Correlation regression analysis is used to determine the relationship between changes in stock prices and the variables: EPS, interest rates, exchange rates, gold prices, rate of inflation. Research model is as follow:

$$Y_t = \beta_0 + \beta_1 X_{1t} + \beta_2 X_{2t} + \beta_3 X_{3t} + \beta_4 X_{4t} + \beta_5 X_{5t} + u_t$$

In which:  $Y_t$  (the dependent variable) is the change in price (profitability ratios) of the stocks in the portfolio and is calculated as follows:

$$Y_t = R_t = \log(p_t) - \log(p_{t-1}) = \log(p_t / p_{t-1})$$

$P_t$ : price index in the second quarter  $t$ ;

$P_{t-1}$ : Price Index in quarter  $t-1$ .

$X_1, X_2, X_3, X_4, X_5$  are the independent variables and are explained in details.

Table.1: The independent variables used in the regression model

Variables	Explanation	Expectation
EPS ( $X_1$ )	EPS of the portfolio	+
USD/VND Exchange rate ( $X_2$ )	Log of the exchange rate (USD / VND)	+
Interest rate ( $X_3$ )	short-term lending interest rate (% /year)	-
Gold rate ( $X_4$ )	Log of gold price (SJC) in domestic market	-
Inflation rate ( $X_5$ )	Consumer Price Index (%) by the General Bureau of Statistics	-

### III. FINDINGS AND DISCUSSION

Table.2: Results of regression analysis

Variables	Correlation coefficient	T-statistic Value
Constant	0.9012	0.63
EPS ( $X_1$ )	0.0026	0.72
USD/VND Exchange rate ( $X_2$ )	0,0005	1,2
Interest rate ( $X_3$ )	0,0059	1,36
Gold price ( $X_4$ )	-0,0075	-2,01
Inflation rate ( $X_5$ )	-0,002	-0,14
Observations	464	
Adjusted R2	32,47	
F- statistic value	1,74	

#### EPS ( $X_1$ ) - (Earning Per Share/ profit per share)

This is the portion of profit which the company attributes to each ordinary outstanding share. EPS is considered as the single most important variable in calculating the share price. In addition, to investors EPS is an indication of profitability on each share. Comparison of EPS over time will help investors know the growth of the company. Firms with higher EPS mean higher profitability. This means more value for investors and vice versa.

According to the regression results, the EPS and the profitability ratio of the stock is positively correlated. This is consistent with the theory and with results of previous studies (Al- Qenae et al., 2002; al-Tamimi et al., 2007; Uddin et al., 2013) etc, on the Taiwan and China stock markets.

Particularly, when the EPS increases by 1%, the price of the equity portfolio rises 0.0026 respectively. This relationship is statistically significant at 1%. This is the explanation for the positive correlation between EPS and profitability ratios of the stocks.

#### Exchange rate USD / VND ( $X_2$ )

Similar to EPS, regression analysis results indicate that the exchange rate is positively correlated with the profitability ratio of the stocks at a statistically significant level of 5%. This result is consistent with studies by Eita (2012), Aurangzeb (2012), Phan Thi Bich Nguyet and Pham Duong Phuong Thao (2013) in Vietnam stock market as well as overseas stock markets. However, the levels of impacts are different in each market. Specifically, when the USD / VND exchange rate rises 1%, the profitability ratio of the stock rises 0.05%.

This effect can be explained as follows: when the rate increases, the dollar rises, which is synonymous with

devaluation the VND. At that time, \$ 1 will exchange for over more VND, and so there will be an excess from the increase in this rate. Therefore, the dollar appreciation gives investors more business opportunities. This encourages more indirect investment flow into Vietnam. This means that the demand for shares in the market should increase and the stock price will rise.

#### **Interest rates (X3)**

Regression results from the study show that the relationship between interest rates and the profitability ratio of the stocks is positively correlated. This is inconsistent with the expected hypothesis. Specifically, as interest rates increase or decrease by 1%, the profitability ratio of the stock will increase or decrease of 0.0059%.

This result is inconsistent with the findings demonstrated by Al Qenae et al., 2002; Al-Tamimi et al., 2007, Phan Thi Bich Nguyet and Pham Duong Phuonh Thao (2013). When analyzing an economy in general to invest in the stock market, it is necessary to take interest rates and fundamentals of investment decision into account. Many previous studies have explained that increase in market interest rates means a fall in bond prices. As a result, investors will shift from stocks to bonds. This causes the stock price to fall. However, in the authors' opinion, the differences are in part because of the ineffectiveness of the government's monetary policy in recent years. Therefore, the change in interest rates is not well-absorbed by the stock market.

#### **Gold prices (X4)**

In Vietnam, gold is also seen as an investment channel for many people. Therefore, the domestic gold price changes are expected to have certain effects on the price of the shares listed on the market.

The results of the study show that the volatility of the gold price is negatively correlated with profitability ratio of the stock. Quantitatively, while gold prices increase or decrease by 1%, the profitability ratio of the stock will go down or up by 0.75%. In terms of statistics, the negative correlation between the gold price movements and the profitability ratio of the stock is significant at the 5% level. This is consistent with findings by John Leyers (2007) and Twite (2002) on the Australian stock market. However, the finding is contradicted with Truong Dong Loc and Vo Thi Hong Doan (2009) who stated that the gold price and profitability ratio of the stock are positively correlated. Explanation for this relationship is based on the theory stating that capital flows will shift from investment channels with lower profitability ratios to a channel with a higher profitability rate. Therefore, when gold prices rise, investment in gold is an attractive

channel, and investors can "avoid" inflation. Meanwhile, cash flow shifts from stock markets to gold markets should make the market stock price fall, and vice versa.

#### **Inflation rate (X5)**

In this study, the rate of inflation is measured by consumer price index (CPI) announced by the general statistics office. It is consistent with results from previous studies (Al-Qenae et al., 2002; Al-Tamimi et al., 2007; Liu and Shrestha, 2008, Mehr-un-Nisa and Nishat, 2012). Regression analysis results obtained from this study show that the profitability ratio of stocks are negatively correlated with the rate of inflation. Specifically, when the rate of inflation rise by 1%, the profit rate of stocks will decrease .002% and vice versa. The inversely proportional relationship is statistically significant at 1%. This result is completely in line with what have been happening in Vietnam stock markets recently. For investors, inflation is an important indicator of the "health" of the economy, and so it has a direct impact on the price of the stocks on the market. Rising inflation means higher cost of inputs for production and business activities of enterprises. Meanwhile the prices of products and services will also increase accordingly to ensure business operations profit. However, the consumption of products and services will decline due to higher selling prices, particularly in the short-term and when consumers look for alternative products. This makes the targeted profitability is now difficult to achieve or even decline, affecting the profit expectations of the business in the future. As a result, the share prices decline. Therefore, inflation is an expression of the uncertainty of the economy and the psychology of investors in the stock market will be affected severely. For safety, many investors will withdraw from the market and invest in other safer channels. Consequently, the share price will fall as inflation rate goes up.

Based on the results of the regression model, the F-statistic value of 1.74 indicates that the model used is highly reliable at statistical significance at 1%. Besides, the value of  $R^2$  is 32.43%, which means that the independent variables in the model can explain 32.43% of the changes of the dependent variable.

## **IV. CONCLUSIONS AND SUGGESTIONS**

### **4.1. Conclusions**

The main objective of the study is to find out the internal and macroeconomic factors having impacts on the stock prices of the companies in industrial sector listed on HOSE. By means of regression analysis of data on stock prices and EPS of 29 companies in the industrial sector and macro indicators such as exchange rates, gold prices,



interest rates and inflation in the period of 2012-2015. The research concludes that EPS and USD / VND exchange rate are positively correlated with stock price fluctuations; on the other hand, gold price and inflation are inversely correlated with stock prices. However, due to data is secondary and may be distorted so the results may not reflect the most accurate market movements; little time and limited knowledge cause unavoidable shortcomings and errors in the research.

#### 4.2 Suggestions

The study results show that the share price of companies in industrial sector listed on HOSE are influenced by internal factors (earnings per share - EPS) and macroeconomic factors (exchange rates, gold prices and inflation rate).

However, these effects have different impacts on each stock price index. On that basis, the study makes a number of recommendations for policy - making with the aim of increasing the positive impacts and minimizing the negative impacts of these factors on the stock prices of the companies in industrial sector in Vietnam.

##### 4.2.1 Fair allocation of earnings per share

EPS is used as an indicator of the profitability of enterprises, often regarded as the single most important variable in calculating the share prices. This is also the principal components of P / E (price-earnings ratio). This coefficient (P / E) is one of the important indicators in analyzing securities investment. Income from shares will have a decisive effect on the market price of shares. Therefore, the joint-stock companies should focus on reasonable dividend to meet the goal of attracting investment from outside sources and maintaining the company's net income to meet business operations and reinvestment in the future at the same time.

##### 4.2.2 Inflation control

There should be coordination, flexibility between monetary policy and fiscal policy in order to avoid the adverse effects on effective implementation of each policy. Inflation is affected by many factors such as economic structure, import and export situations, the credit policy of commercial banks or the fiscal policy of the State. However, inflation is possible mainly from the money supply to the economy. Therefore, inflation control requires measures on the money supply such as tight monetary policy, control of interest rates in line with different situations of the market, directing credit policy to key economic activities. The application of this solution requires the supervision and management of the State Bank as well as the coordinated implementation of

credit institutions to ensure the objectives and maintain effective operational stability of the banking system to keep inflation rate at a reasonable level.

Besides, there should be a focus on collecting information, processing data quickly and promptly and accurately on inflation in order to provide sufficient information to meet the assessment of the state of the economy in general and business activities of manufacturing companies in particular. From that there are solutions to respond promptly to bad situations to minimize the risks to the economy.

##### 4.2.3 Stable exchange rates

The exchange rate plays an important role in the commercial activities of the economy. Specifically, in the current period, while Vietnam is implementing open policies to attract foreign investment, especially indirect investment through the draft content allowing foreign investors to buy shares, own 51% of the charter capital of the active securities firms, establish foreign-own securities businesses, buy and own 100% of foreign securities organizations operating in Vietnam. The stable exchange rate would help the policy of attracting foreign capital be more efficient; help to build confidence among investors about a stable business environment to have many preferential policies; to create steps forward in attracting more capital from abroad to invest and develop the securities market in the future.

To achieve stable exchange rates, it is necessary to increase economic activities to generate foreign currency revenues such as improving the balance of international payments, foreign currency reserves increase, and the State Bank can use these funds to regulate and maintain the exchange rate at a stable level. Besides, the relevant departments should perform well their functions in macro management to make timely regulatory and suitable policies when there are fluctuations in the economy and the impact on the exchange rate. When being carried out, the above solutions will boost the economic potentials and there are enough tools to maintain stability of the foreign exchange market against external shocks to help macroeconomic stability, limit extraordinary impact of macroeconomic factors on the stock price index.

##### 4.2.4 Executive flexible monetary policy

The management of monetary policy plays an important role in the economy. It helps the economy achieve the macroeconomic objectives such as inflation and exchange rate stability and further economic growth. Monetary policy uses changes in the money supply to

affect the entities in the economy. Monetary policy affects the money supply and then the investment decisions in the securities market. Implementing monetary policies to expand the money supply will cause the general level of interest rates to fall, encouraging people to save more and investors can borrow at lower cost than before. This helps investors seek a more attractive investment channel and one of which is in securities markets. Hence, the stock rising demand leads to share price increases.

Performing active and more flexible monetary policy in order to fit the actual situation helps control inflation, macroeconomic stability and economic growth. Besides, this helps to limit the negative impacts on the stock price index when there are effects from the economy and stimulate confidence in investors to enter the market.

In addition, the state should strengthen their supervision in the currency markets, quality control activities and treatment of bad debts at credit institutions to find out and deal with errors promptly to ensure full operation security of the institutions; to help minimize the negative impacts on the share price index and stock market in general and the stock prices of companies in the industrial sector listed on HOSE in particular.

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